



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,618	03/14/2007	Hirohiko Arai	040894-7454	4868
9629 7590 01/27/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004				
EXAMINER				
TOLAN, EDWARD THOMAS				
ART UNIT		PAPER NUMBER		
3725				
MAIL DATE		DELIVERY MODE		
01/27/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,618

Applicant(s)

ARAI, HIROHIKO

Examiner

EDWARD TOLAN

Art Unit

3725

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4 and 6 is/are rejected.
- 7) ☒ Claim(s) 2 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai (JP 2003-181555) in view of Rolin et al. (4,509,351). Arai discloses a rotating mandrel (2) and a workpiece (1) formed against the mandrel by a roller (4). The roller is controlled based upon a product shape data that is previously stored. The product shape different from circular in its cross-section is formed by using a polygonal mandrel (fig. 2). Arai does not disclose force sensing. Rolin teaches a metal spinning method for forming a work of a metal sheet (column 3, line 44) by pushing the work onto a rotating mandrel (5) using a forming roller (6). Driving actuators (12,13,14) receive feedback signals from a force sensor (22) (column 4, lines 40-42 and column 5, lines 22-31) to control a pushing force of the forming roller (6). The work is formed into a tapered (non-circular) cross section by following an outline of the tapered mandrel (5). A motion of the forming roller is stored (column 5, lines 59-62) from past spinning workings and a rotational speed of a motor for rotating the mandrel is controlled (column 6, line 6). Rolin teaches a jig (3,4,) for clamping the work between the mandrel and jig. Rolin discloses movement of the roller along axes a,b. It would have been obvious to

one skilled in the art at the time of invention to provide Arai with force sensing as taught by Rolin in order to control a pushing force of the roller against the work.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai (JP 2003-181555) in view of Rolin et al. (4,509,351) and further in view of Okamoto et al. (JP 59-061529). Arai in view of Rolin does not disclose that the forming roller is fed in a direction of the axis of rotation of the mandrel. Okamoto teaches a forming roller (4) that is tilted in a direction of an axis of rotation of a mandrel (1). It would have been obvious to one skilled in the art at the time of invention to position the forming roller of Arai in view of Rolin at a tilted angle along the axis of rotation of the mandrel as taught by Okamoto in order to start the work at a desirable forming angle.

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection. Applicant has stated in the response that "tapered is non-synonymous with a non-circular cross section normal to the axis of rotation" therefore the tapered product of Rolin does not meet this claim limitation. The

Examiner will accept Applicant's arguments concerning a tapered (conical) form having a cross-section that is circular in a direction normal to rotation axis. Arai has been used to show that non-circular cross-sectional products are produced by using a mandrel of a polygonal shape.

The Examiner accepts Applicant's arguments with respect to claims 2 and 5 and the limitation "the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel" to determine an estimation for a rotational speed of the mandrel is considered to be allowable over Rolin and Arai (JP 2003-181555).

Allowable Subject Matter

Claims 2 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The claim limitations in claims 2 and 5, "the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel" to determine an estimation for a rotational speed of the mandrel is allowable over the prior art of record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 3725

Any inquiry concerning this communication should be directed to Ed Tolan whose telephone number is 571-272-4525. FAX communications should be sent to 571-273-8300.

/Edward Tolan/

Primary Examiner, Art Unit 3725